Instruction

MI 020-531
December 2010

Model RTT30
I/A Series® Temperature Transmitter
With HART or FOUNDATION Fieldbus Protocol
Safety Information

invensys
Foxboro®

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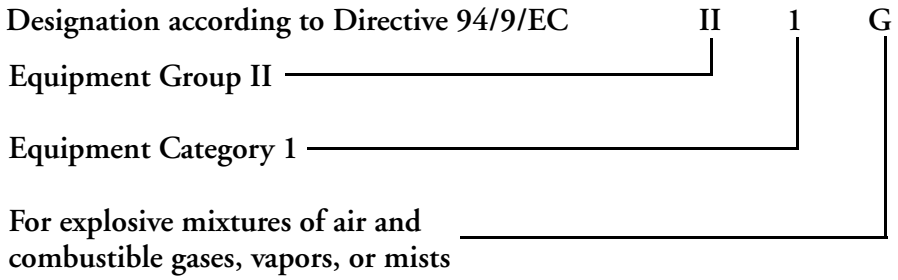
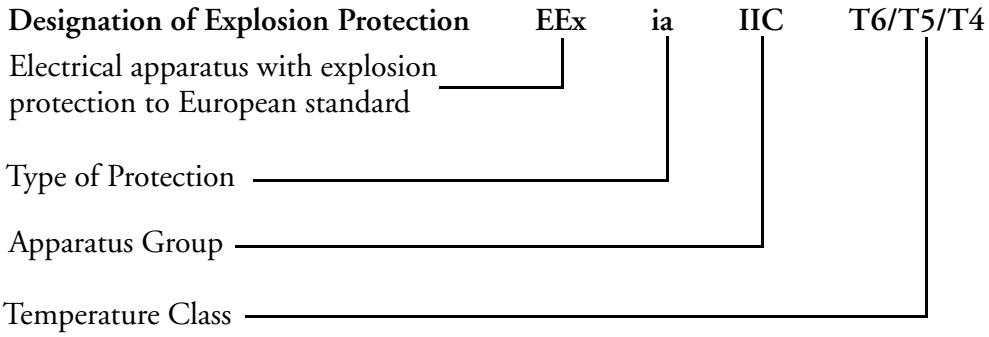
Safety Instructions For Electrical Apparatus for Explosion-Hazardous Areas According to Directive 94/9/EC (ATEX)

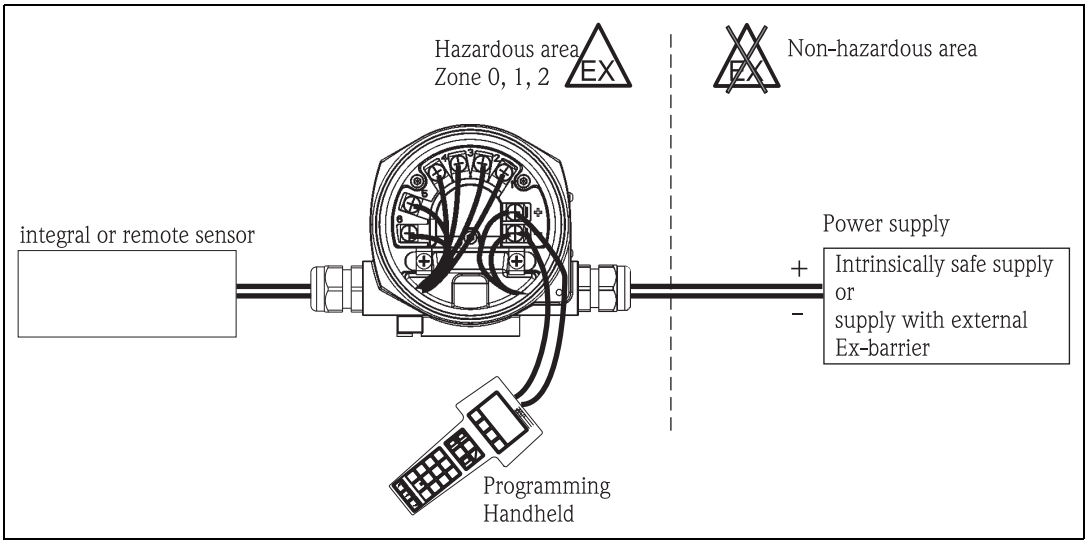


Areas of Application

Equipment Category	Explosive Gas-Air Mixtures (G)
Category 1	Zone 0, 1 or 2
Category 2	Zone 1 or 2
Category 3	Zone 2



Safety Notes (Intrinsic Safety EEx ia)



1. Install the device according to the manufacturer's instructions and any other valid standards and regulations.
2. Unit set-up is also allowed in the Ex area using a certified handheld module.
3. When interconnecting, the rules and regulations for such intrinsically safe circuits must be adhered to.
4. When connecting two independent sensors make sure that the potential compensation cables are at the same potential.

Safety Notes for Zone 0

Explosive moisture/air mixtures are only allowed to occur under atmospheric conditions:

- 20 °C ≤ Ta ≤ + 60 °C

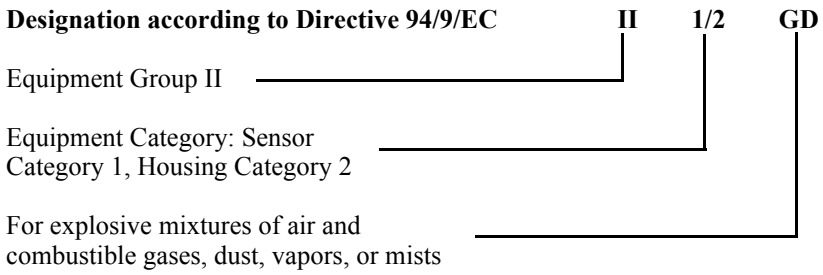
0.8 bar ≤ p ≤ 1.1 bar

1. If there is no explosive mixture present or the additional measures according to EN 1127-1 are upheld, the unit can also be operated outside the atmospheric conditions according to manufacturer's specification.
2. The RTT30 must be installed so, that even in the event of rare incidents, an ignition source due to impact or friction between the enclosure and iron/steel is excluded.

RTT30		II 1G EEx ia IIC T6/T5/T4	
Power supply (terminals + and -)		U_i ≤ 30 V dc I_i ≤ 300 mA P_i ≤ 1000 mW C_i ≤ 5 nF L_i = 0	
Sensor circuit (terminals 3 to 6)		U_0 ≤ 7.6 V dc I_0 ≤ 29.3 mA P_0 ≤ 55.6 mW	
Max. connection values	EEx ia IIC EEx ia IIB EEx ia IIA	L_0 = 40 mH L_0 = 150 mH L_0 = 300 mH	C_0 = 10.4 µF C_0 = 160 µF C_0 = 1000 µF
Temperature range with display without display	T6 T5 T4 T4	Ta = -40°C to + 55°C Ta = -40°C to + 70°C Ta = -40°C to + 70°C Ta = -40°C to + 85°C	

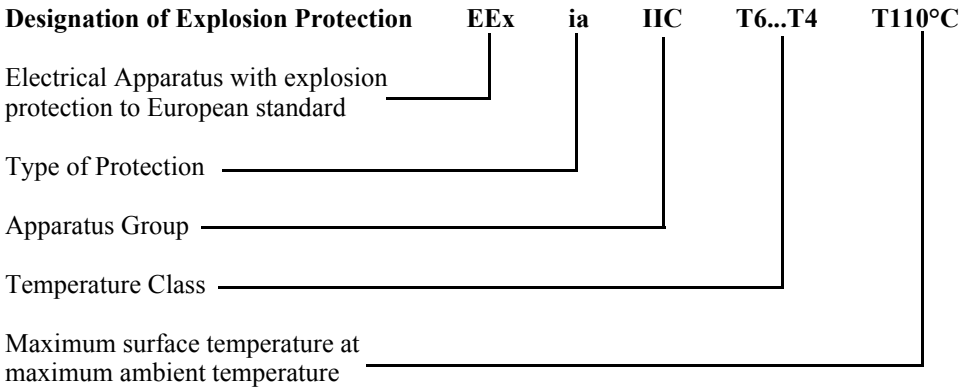
2. RTT30, HART, ATEX II 1/2 GD

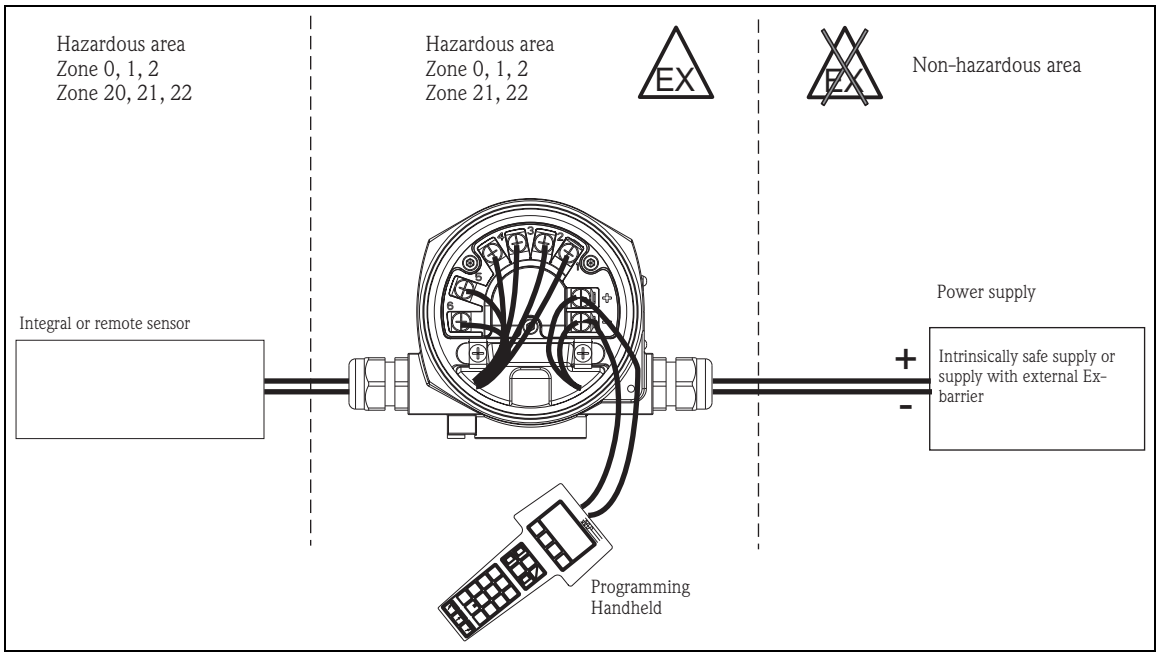
For Electrical Apparatus Certified For Use In Explosion-Hazardous Areas



Areas of Application

Equipment Category	Explosive Gas-Air Mixtures (G)	Explosive Dust-Air Mixtures (D)
Category 1	Zone 0, 1 or 2	Zone 20, 21 or 22
Category 2	Zone 1 or 2	Zone 21 or 22
Category 3	Zone 2	Zone 22





Safety Instructions RTT30 (Intrinsic Safety EEx ia)

- Install the device according to the manufacturer's instructions and any other valid standards and regulations.
- Unit set-up is also allowed in the Ex area using a certified handheld module.
- For ambient temperatures greater than 70°C, suitable cables, wires, or conductors for conduit must be used.
- When interconnecting, the rules and regulations for such intrinsically safe circuits must be adhered to.
- When connecting two independent sensors, make sure that the potential compensation cables are at the same potential.

Safety Instructions for Zone 0

- Explosive moisture/air mixtures are only allowed to occur under atmospheric conditions: $20°C \leq Ta \leq +60°$
- $0.8\ bar \leq p \leq 1.1bar$
- If there is no explosive mixture present or the additional measures according to EN 1127-1 are upheld, the unit can also be operated outside the atmospheric conditions according to manufacturer's specification.
- The temperature transmitter must be installed so, that even in the event of rare incidents, an ignition source due to impact or friction between the enclosure and iron/steel is excluded.

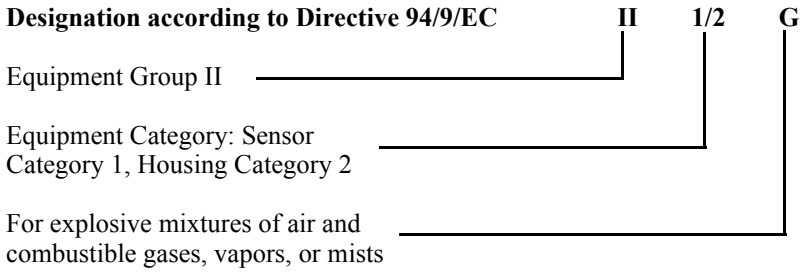
Safety Instructions (Dust Ignition Protection)

- These notes are to be followed only in the case when the installation type "dust ignition protection" is to be guaranteed:
- Seal the cable entries tight with tested cable glands (IP65).
- In an explosive atmosphere, do not open the device when voltage is supplied (ensure that the IP65 housing protection is maintained during operation).
- The housing of the RTT30 must be connected to the potential matching line.
- For directly mounted temperature sensors, only use certified sensors in category 1D or 2D with at least the following designation: II 1D T110°C or II 2D T110°C for use in Zone 20 or Zone 21.
- For remote temperature sensors, only use certified sensors on category 1D or 2D with at least the following designation: II 1/2D T110°C or II 2D T110°C for use in Zone 20 or Zone 21.

RTT30		**II1/2GD EEx ia IIC T6...T4 T110°C**	
Power Supply (terminals + and -)		Ui ≤ 30 VDC Ii ≤ 300 mA Pi ≤ 1000 mW Ci ≤ 5 nF Li = 0	
Sensor Circuit (terminals 1 to 6)		Uo ≤ 7.6 VDC Io ≤ 29.3 mA Po ≤ 55.6 mW	
Max. Connection Values	EEx ia IIC EEx ia IIB EEx ia IIA	Lo = 40 mH Lo = 150 mH Lo = 300 mH	Co = 10.4 µF Co = 160 µF Co = 1000 µF
Temperature Range with display without display	T6 T5 T4 T4	Ta = -40°C ... +55°C Ta = -40°C ... +70°C Ta = -40°C ... +70°C Ta = -40°C ... +85°C	

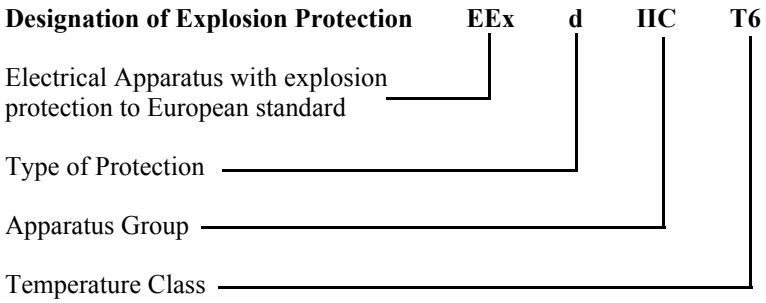
3. RTT30, HART, ATEX II 1/2D

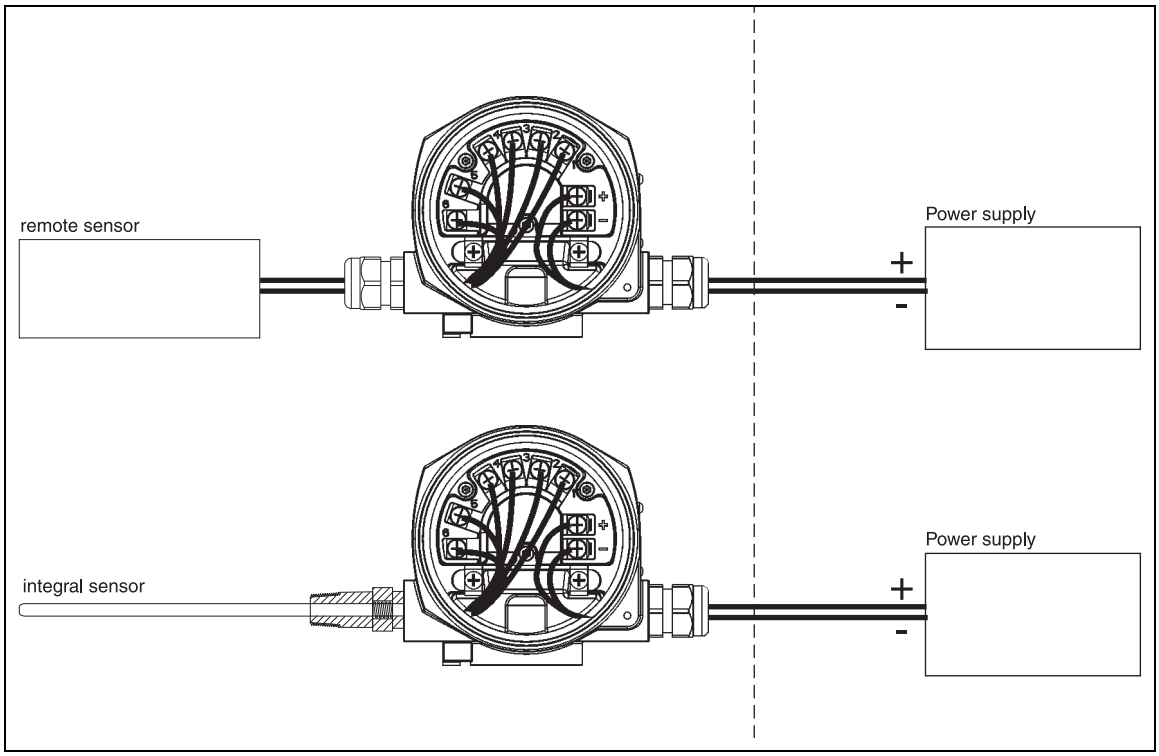
Safety Instructions For Electrical Apparatus Certified For Use In Explosion-hazardous Areas



Areas of Application

Equipment Category	Explosive Gas-Air Mixtures (G)
Category 1	Zone 0, 1 or 2
Category 2	Zone 1 or 2
Category 3	Zone 2





Safety Instructions RTT30 (flameproof enclosure EEx d)

1. Install the device according to the manufacturer's instructions and any other valid standards and regulations.
2. The RTT30 is to be connected using suitable cable glands and wire entries of protection type Pressure-Tight Enclosure "d".
3. Before commissioning, the threaded end caps must be fitted tightly and secured using the securing screws tightened.
4. Only use approved wire entries according to EN60079-14 chapter 10.3.
5. Entry glands not used must be closed according to EN 50018 chapter 11.9.
6. The temperature sensor must comply with the requirements according to EN 50018.
7. For directly connected springloaded sensors, a thermowell must be used.
8. For remote temperature sensors, only use approved sensors with a certified category 1G or 2G marked not less than II 1G EEx d IIC T6, T5, and T4 or II 2G EEx d IIC T6, T5, and T4 for use in Zone 0 resp. Zone 1.
9. For integral temperature sensors, only use approved sensors with a certified category 1G or 2G marked not less than II 1/2G EEx d IIC T6, T5, and T4 or II 2G EEx d IIC T6, T5, and T4 for use in Zone 0 resp. Zone 1.

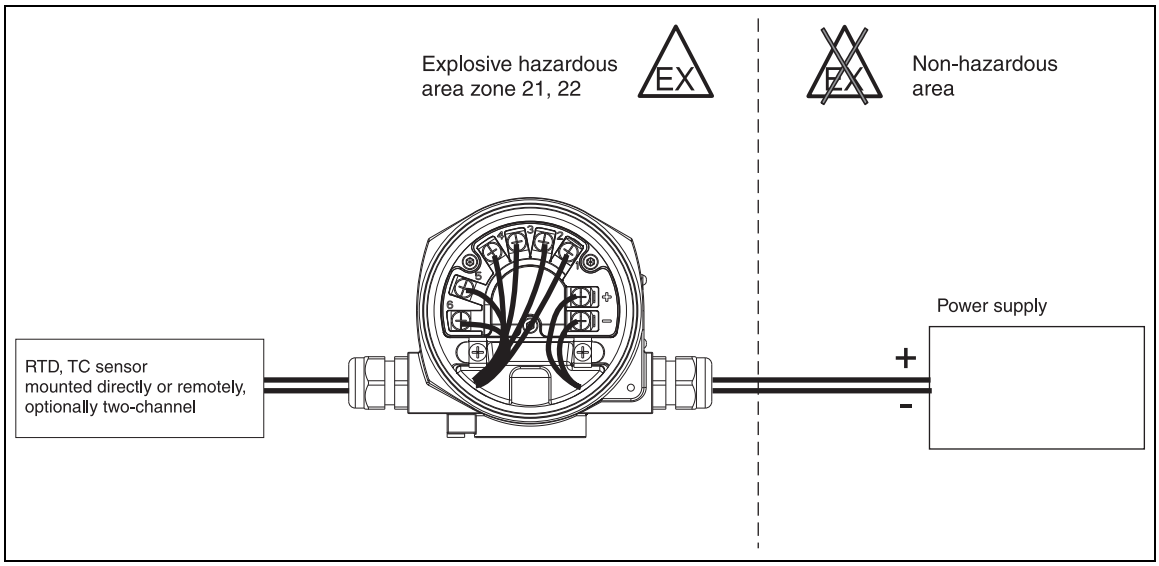
RTT30		**II 1/2G EEx d IIC T6/T5/T4** **II 2G EEx d IIC T6/T5/T4**
Power supply (Terminals + and -)		U ≤ 40 V dc P ≤ 3 W
Temperature range	T6 T5 T4	T_a = -40°C to +55°C T_a = -40°C to +70°C T_a = -40°C to +80°C

4. RTT30, HART, ATEX 1/2D or 2D

For Electrical Apparatus Certified For Use In Explosion-Hazardous Areas

Areas of Application

Equipment Category	Explosive Dust-Air Mixtures (D)
Category 1	Zone 20, 21 or 22
Category 2	Zone 21 or 22
Category 3	Zone 22



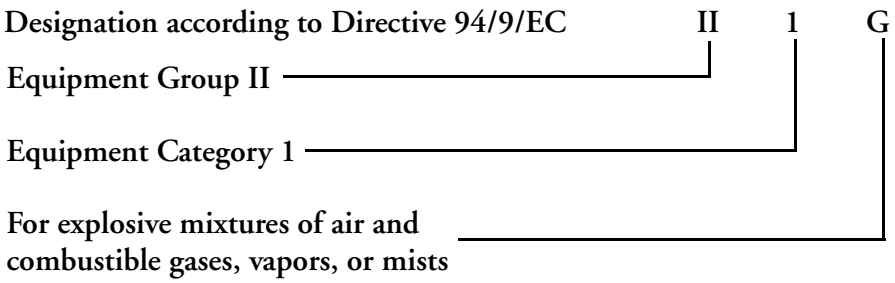
Safety Instructions RTT30 (Dust Ignition Protection)

1. Install the device according to the manufacturer's instructions and any other valid standards and regulations.
2. Seal the cable entries tight with tested cable glands (IP65).
3. The housing of the RTT30 must be connected to the potential matching line.
4. For built-in temperature sensors, only use certified sensors in category 1D or 2D with at least the following designation II 1D T 110°C or II 2D T 110°C for use in Zone 20 or Zone 21.
5. For remote temperature sensors, only use certified sensors on category 1D or 2D with at least the following designation II 1/2D T 110°C or II 2D T 110°C for use in Zone 20 or Zone 21.

RTT30	**II 1/2D T110°C IP66/67** **II 2D T110°C IP66/67**
Power Supply Circuit (Terminals + and -)	U ≤ 40 V dc P ≤ 3 W
Temperature Range	T_a = -40°C to +80°C

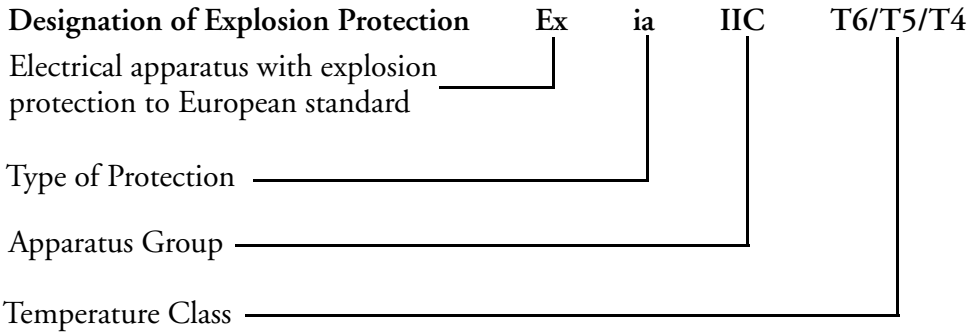
5. RTT30 , FOUNDATION Fieldbus and PROFIBUS, ATEX II 1G

Safety Instructions For Electrical Apparatus for Explosion-Hazardous Areas According to Directive 94/9/EC (ATEX)

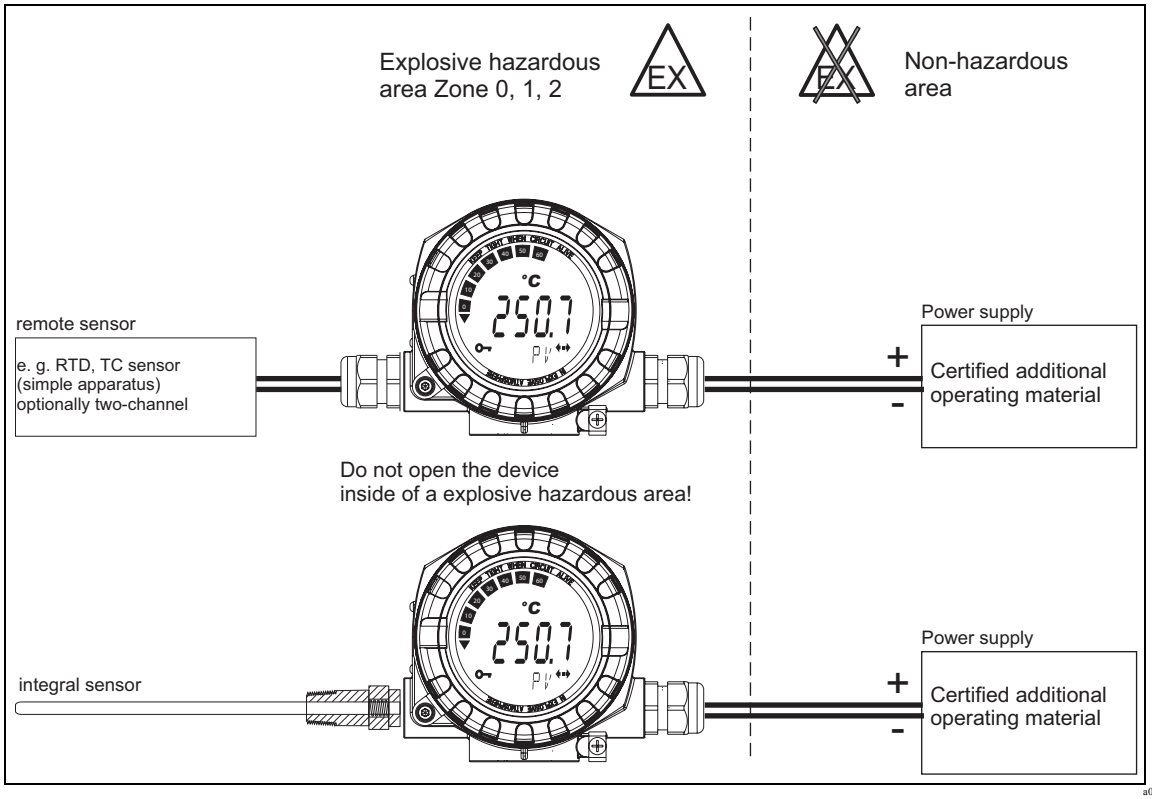


Areas of Application

Equipment Category	Explosive Gas-Air Mixtures (G)
Category 1	Zone 0, 1 or 2
Category 2	Zone 1 or 2
Category 3	Zone 2



Safety Notes (Intrinsic Safety EEx ia)



1. Install the device according to the manufacturer's instructions and any other valid standards and regulations.
2. When interconnecting, the rules and regulations for such intrinsically safe circuits must be adhered to.
3. When connecting the measurement unit with a certified circuit of category “ib” into an IIC or IIB hazardous area, the ignition class changes to: Ex ib IIC or Ex ib IIB.
4. When connecting two independent sensors, make sure that the potential compensation cables are at the same potential.

Safety Notes for Zone 0

Explosive moisture/air mixtures are only allowed to occur under atmospheric conditions:

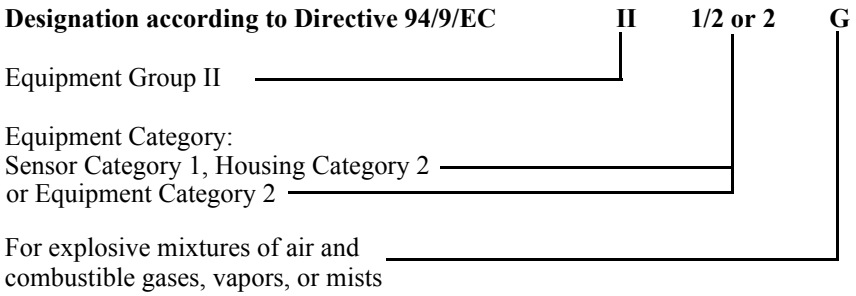
- 20 °C ≤ Ta ≤ +60 °C
0.8 bar ≤ p ≤ 1.1 bar

1. If there is no explosive mixture present or the additional measures according to EN 1127-1 are upheld, the unit can also be operated outside the atmospheric conditions according to manufacturer's specification.
2. The RTT30 must be installed so, that even in the event of rare incidents, an ignition source due to impact or friction between the enclosure and iron/steel is excluded.

RTT30 FOUNDATION Fieldbus™/PROFIBUS® PA-protocol	II1G	Ex ia IIC	T6/T5/T4
Power Supply (terminals + and -)	U_i ≤ 17.5 V dc I_i ≤ 500 mA P_i ≤ 5.5 W C_i ≤ 5 nF L_i ≤ 10 µH	or	U_i ≤ 24 V dc I_i ≤ 250 mA P_i ≤ 1.2 W
Applicable for connection to a fieldbus system according to FISCO/FNICO-model			
Sensor Circuit (terminals 3 to 6)	U_0 ≤ 8.6 V dc I_0 ≤ 26.9 mA P_0 ≤ 57.6 mW		
Max. Connection Values Ex ia IIC Ex ia IIB Ex ia IIA	L_0 = 48 mH L_0 = 180 mH L_0 = 380 mH		C_0 = 6.2 µF C_0 = 55 µF C_0 = 1000 µF
Temperature Range T6 T5 with display T4 without display T4	Ta = -40°C to + 55°C Ta = -40°C to + 70°C Ta = -40°C to + 70°C Ta = -40°C to + 85°C		

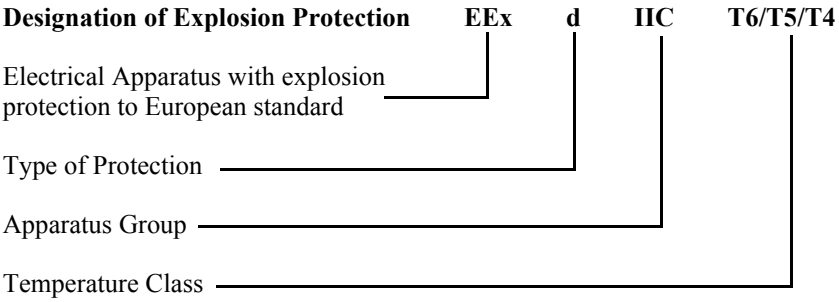
6. RTT30, FOUNDATION Fieldbus or PROFIBUS, ATEX II 1/2G or 2G

For Electrical Apparatus Certified For Use In Explosion-Hazardous Areas

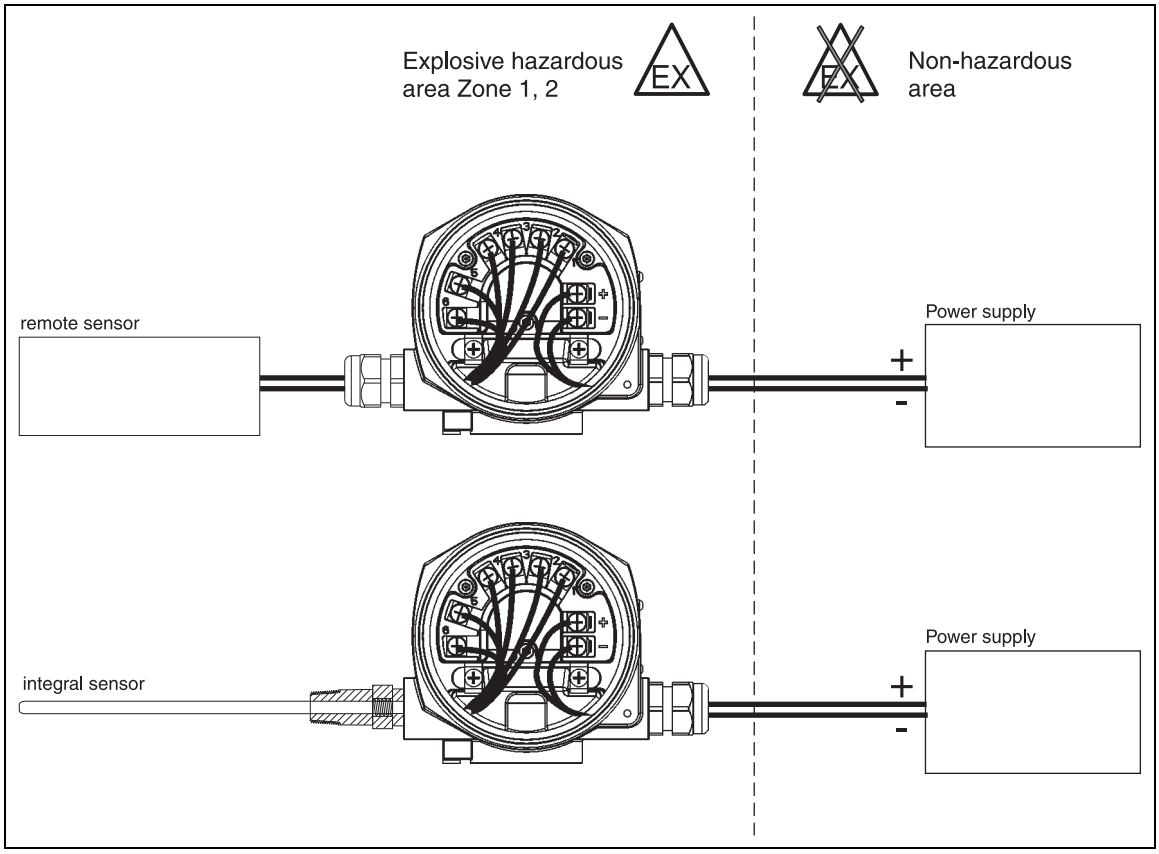


Areas of Application

Equipment Category	Explosive Gas-Air Mixtures (G)
Category 1	Zone 0, 1 or 2
Category 2	Zone 1 or 2
Category 3	Zone 2



Safety Notes for Flameproof Enclosure EEx d

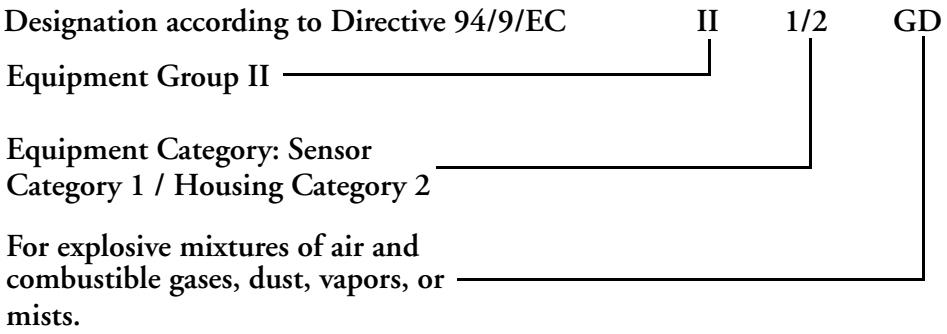


1. Install the device to the manufacturer's instructions and in accordance with the valid norms and regulations.
2. The RTT30 is to be connected using suitable cable glands and wire entries of protection type flameproof enclosure "d".
3. Before commissioning, the threaded end caps must be fitted tightly and secured using the securing screws tightened.
4. Only use approved wire entries according to EN 60079-14 chapter 10.3.
5. Entry glands not used must be closed according to EN 50018 chapter 11.9.
6. The temperature sensor must comply with the requirements according to EN 50018.
7. For directly connected springloaded sensors, a thermowell must be used.
8. For remote temperature sensors, only use approved sensors with a certified category 1G or 2G marked not less than II 1G EEx d IIC T6, T5, and T4 or II 2G EEx d IIC T6, T5, and T4 for use in Zone 0 resp. Zone 1.
9. For integral temperature sensors, only use approved sensors with a certified category 1G or 2G marked not less than II 1/2G EEx d IIC T6, T5, and T4 or II 2G EEx d IIC T6, T5, and T4 for use in Zone 0 resp. Zone 1.

RTT30 FF/PA		**II 1/2G EEx d IIC T6/T5/T4 II 2G EEx d IIC T6/T5/T4**
Power Supply (terminals + and -)		U ≤ 35 V dc P ≤ 3 W
Temperature Range	T6 T5 T4	Ta = -40°C to + 55°C Ta = -40°C to + 70°C Ta = -40°C to + 80°C

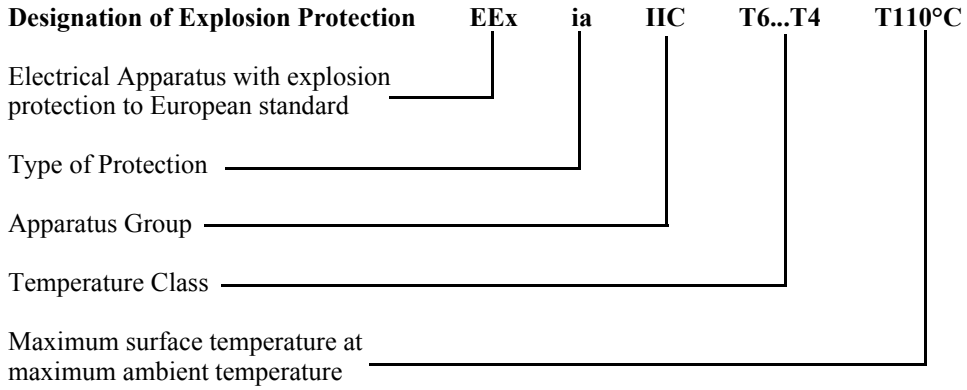
7. RTT30 , FOUNDATION Fieldbus and PROFIBUS, ATEX II 1/2 GD

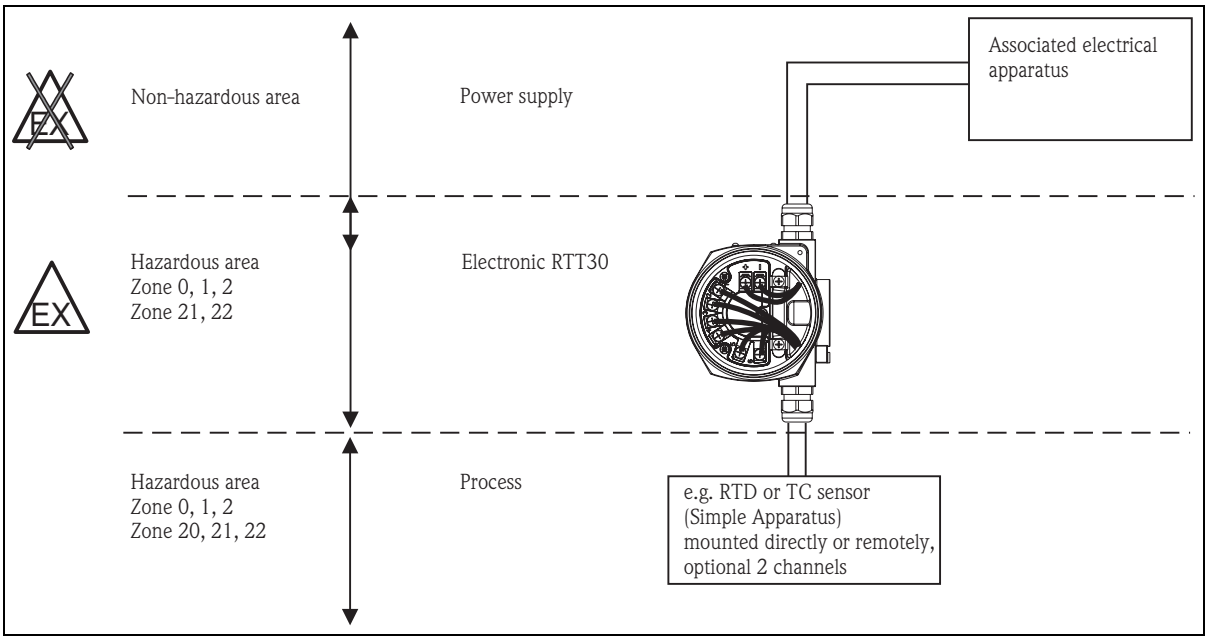
Safety Instructions For Electrical Apparatus Certified for Use in Explosion-Hazardous Areas)



Areas of Application

Equipment Category	Explosive Gas-Air Mixtures (G)	Explosive Dust-Air Mixtures (D)
Category 1	Zone 0, 1 or 2	Zone 20, 21 or 22
Category 2	Zone 1 or 2	Zone 21 or 22
Category 3	Zone 2	Zone 22





Safety Instructions RTT30 (Intrinsic Safety EEx ia)

- Install the device according to the manufacturer's instructions and any other valid standards and regulations.
- Unit set-up is also allowed in the Ex area using a certified handheld module.
- For ambient temperatures greater than 70°C, suitable cables, wires, or conductors for conduit must be used.
- When interconnecting, the rules and regulations for such intrinsically safe circuits must be adhered to.
- When connecting two independent sensors, make sure that the potential compensation cables are at the same potential.

Safety Instructions for Zone 0

- Explosive moisture/air mixtures are only allowed to occur under atmospheric conditions:

  - 20 °C ≤ Ta ≤ + 60 °C
  0.8 bar ≤ p ≤ 1.1 bar

- If there is no explosive mixture present or the additional measures according to EN 1127-1 are upheld, the unit can also be operated outside the atmospheric conditions according to manufacturer's specification.
- The RTT30 must be installed so, that even in the event of rare incidents, an ignition source due to impact or friction between the enclosure and iron/steel is excluded.

Safety Instructions (Dust Ignition Protection)

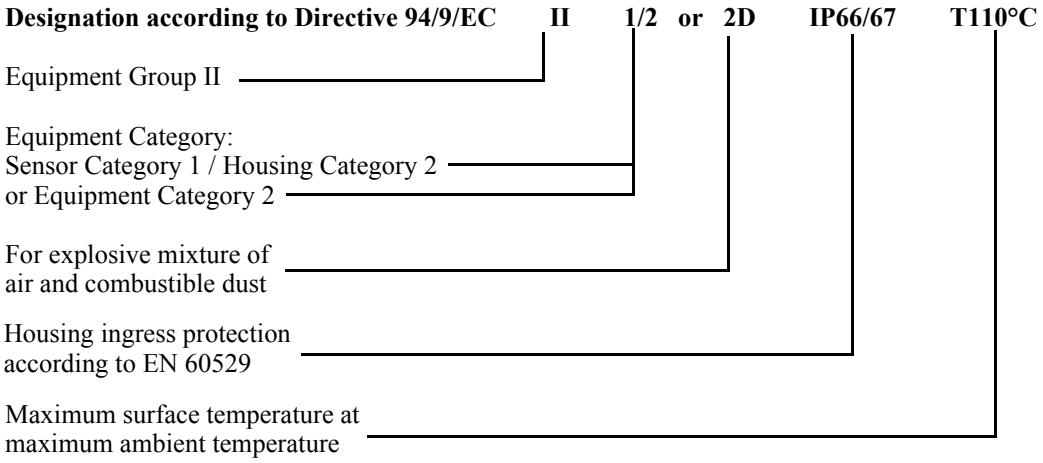
These notes are to be followed only in the case when the installation type “dist-ignition protection” is to be guaranteed.

- Seal the cable entries tight with tested cable glands (IP65).
- In an explosive atmosphere, do not open the device when voltage is supplied (ensure that the IP65 housing protection is maintained during operation).
- The housing of the RTT30 must be connected to the potential matching line.
- For directly mounted transmiter sensors, only use certified sensors in category 1D or 2D with at least the following designation II 1D T110°C or II 2D T110°C for use in Zone 20 or Zone 21.
- For remote temperature sensors, only use certified sensors on category 1D or 2D with at least the following designation: II 1/2D T110°C or II 2D T110°C for use in Zone 20 or Zone 21.

RTT30 FOUNDATION Fieldbus™/PROFIBUS® PA-protocol		**II1/2GD EEx ia IIC**	**T6...T4 T110°C**
Power Supply (terminals + and -)		$U_i \leq 17.5$ V dc or $I_i \leq 500$ mA $P_i \leq 5.5$ W $C_i \leq 5$ nF $L_i \leq 10$ µH	24 V dc 250 mA 1.2 W
Applicable for connection to a fieldbus system according to FISCO/FNICO-model			
Sensor Circuit (terminals 3 to 6)		$U_0 \leq 8.6$ V dc $I_0 \leq 26.9$ mA $P_0 \leq 57.6$ mW	
Max. Connection Values	EEx ia IIC EEx ia IIB EEx ia IIA	$L_0 = 48$ mH $L_0 = 180$ mH $L_0 = 380$ mH	$C_0 = 6.2$ µF $C_0 = 55$ µF $C_0 = 1000$ µF
Temperature Range with display without display	T6 T5 T4 T4	Ta = -40°C to + 55°C Ta = -40°C to + 70°C Ta = -40°C to + 70°C Ta = -40°C to + 85°C	

8. RTT30, FOUNDATION Fieldbus and PROFIBUS, ATEX II 1/2D or 2D

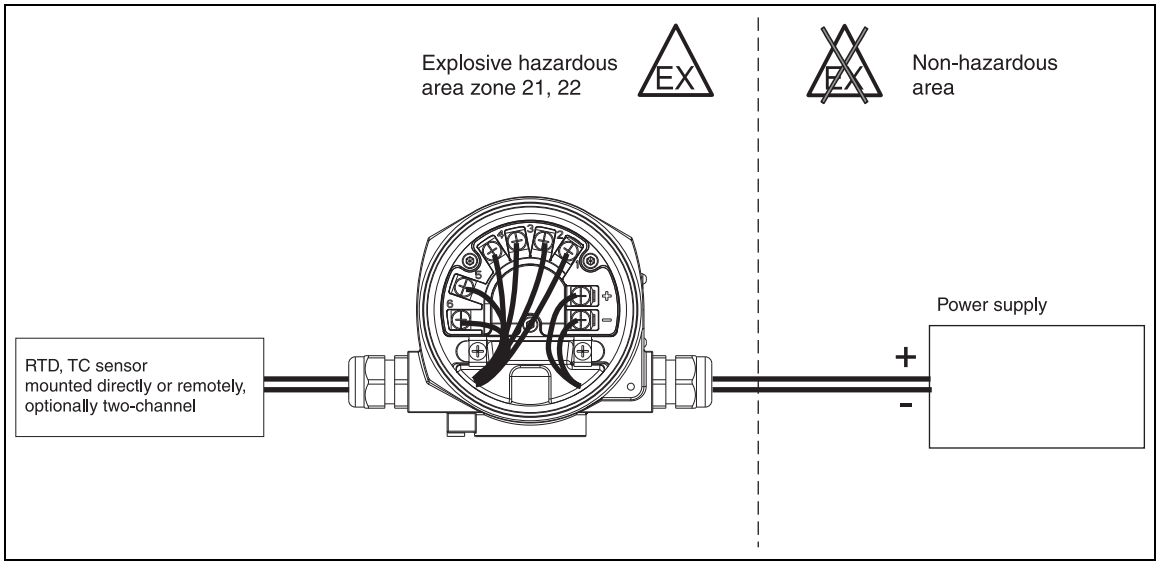
For Electrical Apparatus Certified For Use In Explosion-Hazardous Areas



Areas of Application

Equipment Category	Explosive dust-air mixtures (D)
Category 1	Zone 20, 21 or 22
Category 2	Zone 21 or 22
Category 3	Zone 22

Safety Notes (Dust Ignition Protection)



1. Install the device according to the manufacturer's instructions and any other valid standards and regulations.
2. Seal the cable entries tight with tested cable glands (IP65).
3. The housing of the RTT30 must be connected to the potential matching line.
4. For ambient temperatures greater than 70°C, suitable cables, wires, or conductors for conduit must be used.
5. For directly mounted temperature sensors, only use certified sensors in category 1D or 2D with at least the following designation II 1D T110°C or II 2D T110°C for use in Zone 20 or Zone 21.
6. For remote temperature sensors, only use certified sensors on category 1D or 2D with at least the following designation II 1/2D T110°C or II 2D T110°C for use in Zone 20 or Zone 21.

RTT30	**II 1/2D T110°C IP66/67** **II 2D T110°C IP66/67**
Power Supply Circuit (Terminals + and -)	U ≤ 35 V dc P ≤ 3 W
Temperature Range	T_a = -40°C to +80°C

ISSUE DATES
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Vertical lines to the right of text or illustrations indicate areas changed at last issue date.

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